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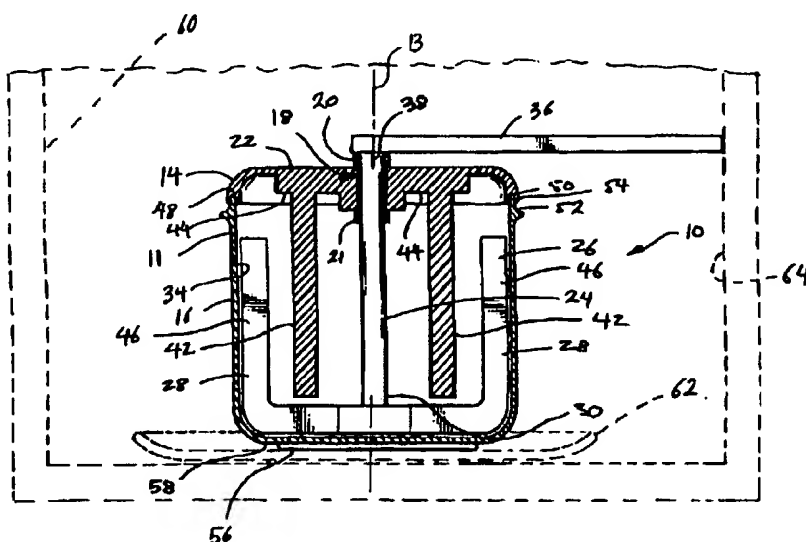
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(54) Title: COOKING UTENSIL WITH STIRRING DEVICE FOR MICROWAVE OVEN



(57) Abstract

A cooking utensil (10), for use in a microwave oven (60), includes at least one stirring member which is engageable with a vessel (11) in which a substance to be cooked is contained. The, or each, stirring member (42) is dimensioned to extend into the vessel (11) and is rotatable relative to the vessel (11). An obstruction member (36) is connected to, and extends from, the, or each, stirring member (42). The obstruction member (36) is dimensioned so that the obstruction member (36) abuts a wall (64) of the oven (60) while the vessel (11) is rotated by a rotary drive mechanism of the oven (60). This causes relative rotational movement between the vessel (11) and the, or each, stirring member (42).

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## COOKING UTENSIL WITH STIRRING DEVICE FOR MICROWAVE OVEN

**THIS INVENTION** relates to a cooking utensil. More particularly, this invention relates to a cooking utensil for use in a microwave oven.

According to the invention, there is provided a cooking utensil for use in a microwave oven, the cooking utensil including

at least one stirring member which is engageable with a vessel in which a substance to be cooked is contained, the, or each, stirring member being dimensioned to extend into the vessel and being rotatable relative to the vessel, in use; and

an obstruction member connected to, and extending from, the, or each, stirring member, the obstruction member being dimensioned so that, in use, the obstruction member abuts a wall of the oven while the vessel is rotated by a rotary drive mechanism of the oven, causing relative rotational movement between the vessel and the, or each, stirring member.

The utensil may include a closure which is fastenable

to the vessel to close the vessel. The, or each, stirring member may be rotatably mounted on the closure to extend into the vessel, in use.

The closure may have at least one baffle arranged thereon, the, or each, baffle being dimensioned to extend into the vessel.

The, or each, stirring member may be configured so that the, or each, stirring member is located proximate an inner surface of a wall of the vessel. The or each, stirring member may be shaped to correspond substantially with a cross-sectional profile of the vessel, taken through an axis of symmetry of the vessel. The, or each, baffle may be positioned operatively inwardly of the, or each, stirring member.

The obstruction member may be mechanically connected directly with the, or each, stirring member, or indirectly via a speed or torque converting arrangement.

In addition, the, or each, stirring member may be rotatably mounted on the closure by means of a bush or the like. The, or each, stirring member may be removable from the closure to facilitate cleaning of the utensil.

The invention extends to the utensil in combination with a vessel, the, or each stirring member being engageable with

the vessel and rotatable relative to the vessel.

It will be appreciated that it is undesirable that the vessel rotate relative to the rotary drive mechanism since this will eliminate the stirring effect. The utensil may thus include an engaging means which may be arranged on the vessel to permit the vessel operatively to engage the rotary drive mechanism of the oven.

The engaging means may include a plate. The plate may be engageable with a drive shaft of the rotary drive mechanism in a conventional manner. The plate and the vessel may have complementary retaining formations defined thereon to inhibit relative rotational movement of the vessel and the plate.

Instead, the engaging means may be a frictional engaging member. The frictional engaging member may be locatable between a bottom surface of the vessel and a turntable of the oven so that the vessel can frictionally engage a surface of the turntable.

The invention is now described, by way of examples, with reference to the accompanying drawings.

In the drawings,

Figure 1 shows an exploded, three dimensional view of a cooking utensil, in accordance with one embodiment of the

invention, for use in a microwave oven;

Figure 2 shows a sectioned side view of the cooking utensil of Figure 1;

Figure 3 shows an exploded, three dimensional view of a cooking utensil, in accordance with a further embodiment of the invention, for use in a microwave oven; and

Figure 4 shows a sectioned side view of the cooking utensil of Figure 3.

In Figures 1 and 2, reference numeral 10 generally indicates a cooking utensil, in accordance with one embodiment of the invention, for use in a microwave oven, indicated, in dotted lines, at 60.

The utensil 10 includes a cylindrical vessel 11. The vessel 11 includes a container 16, in which a substance to be cooked is contained, in use. The container 16 has a substantially rectangular profile taken through an axis of symmetry 13 of the container 16.

The vessel 11 also includes a closure or lid 14 which is clipped onto the container 16 to close the container 16. The lid 14 therefore has a clip formation 48 defined by a perimeter 50 of the lid 14. A mouth 52 of the container 16 defines a complementary clip formation 54. Thus, the lid 14 can be fastened to the mouth 52 of the container 16 by pressing the lid 14 onto the mouth 52 so that the formations 50, 54 engage each

other.

The lid 14 has a passage 18 defined therethrough. A bush 20 is mounted on an outer surface 22 of the lid 14 about one end of the passage 18 and a bush 21 is mounted on an inner surface 44 of the lid 14 about an opposed end of the passage 18. A shaft 24 of a stirrer 26 is received through the bushes 20, 21 and the passage 18, the bushes 20, 21 and the passage 18 being dimensioned so that the shaft 24 is rotatable relative to the lid 14 and thus the vessel 11 when the lid 14 is clipped on to the container 16.

The stirrer 26 has a pair of opposed arms 28 extending from a bottom end 30 of the shaft 24. The arms 28 together define an external profile which is substantially rectangular and which corresponds with the profile of the container 16. Further, the arms 28 and the shaft 24 are configured so that the arms 28 are located proximate an inner surface 34 of the container 16 in a diametral plane of the container 16.

An obstruction member or bar 36 is attached to an upper end 38 of the shaft 24. The bar 36 has an opening 40 defined therein. The upper end 38 is secured to the bar 36 in the opening 40 to prevent relative rotation of the bar 36 and the shaft 24.

The bar 36 is dimensioned so that, when the utensil 10

is placed in the microwave oven 60, on a turnable 62 of the microwave oven 60, the bar 36 abuts a wall 64 of the microwave oven 60. It will therefore be appreciated that rotation of the turnable 62 will result in relative rotation of the vessel 11 and the stirrer 26.

The lid 14 has a pair of baffles 42 attached to, and extending downwardly from, the inner surface 44 of the lid 14. Each baffle 42 is arranged between an upright portion 46 of one arm 28 and the shaft 24. Further, each baffle 42 is cylindrical and rod-like. It will be appreciated that, in use, as the turnable 62 rotates, the stirrer 26 will rotate relative to the vessel 11 and thus the baffles 42, resulting in a counter-rotational stirring action.

It will be appreciated that it is undesirable that the vessel 11 moves relative to the turntable 62, in use. Thus, the container 16 has a rubber O-ring 56 attached to a bottom 58 of the container 16. The O-ring 56 serves to frictionally engage the turntable 62, thereby inhibiting movement of the vessel 11 relative to the turntable 62, in use.

The bushes 20, 21 are removably fastened to the shaft 24. Further, the arms 28 are also removably fastened to the shaft 24. Thus, the utensil 10 can be disassembled for cleaning purposes.



In Figures 3 and 4, reference numeral 80 generally indicates a cooking utensil, in accordance with a further embodiment of the invention, for use in a microwave oven. With reference to Figures 1 and 2, like reference numerals refer to like parts, unless otherwise specified.

The container 16 of the utensil 80 has an arcuate profile taken through the axis of symmetry 13 with a bottom portion of the container 16 being flat.

The utensil 80 includes a plate 82 which engages a drive shaft of a rotary drive mechanism (not shown) of the microwave oven in a conventional manner. Instead of the O-ring 56, the plate 82 and the container 16 have complementary retaining formations 84 defined thereon to permit the container 16 to engage the plate 82 so that relative rotary movement between the plate 82 and the container 16 is inhibited. The retaining formations 84 are in the form of projections 86 defined on the container and holes 88 defined in the plate 82, the projections being received in the holes 88, in use.

The baffles 42 of the utensil 80 have a pair of opposed, flat sides 90 and are tapered at their free ends 92.

Instead of the bush 21, the shaft 24 has an annular lip 94 defined thereon which serves a similar purpose to the bush 21.

The lid 14 of the utensil 80 has a number of openings 96 defined thereon to permit steam to escape from the vessel 11.

It is often necessary to stir substances being cooked in a microwave, during the cooking process. To do so, a user must periodically remove a container, in which the substance is being cooked, from the microwave oven, to stir the substance. This is as a result of the fact that, during cooking, heat generated by the microwave is unevenly distributed throughout the substance and that the substance has a tendency to adhere to the container or form lumps. This is time-consuming and requires constant attention by a user.

Since the arms 28 are positioned as described above, as the turntable 62 or the plate 82 rotates, the arms 28 serve to continuously remove the substance proximate the inner surface 34, thereby inhibiting adhering of the substance to the inner surface 34.

In use, when the substance is removed from the inner surface 34, a rotary motion is imparted to the substance. The baffles 42 thus agitate the substance when the substance, under the action of the stirrer 26, impinges on the baffles 42. This agitation of the substance facilitates even heat distribution within the substance so that a user can obtain the correct texture and viscosity in the cooked substance.

The applicant believes that the invention provides a means for cooking and stirring a substance simultaneously in a microwave oven. In particular, the applicant believes that the utensil 10 is particularly useful for cooking substances which require stirring in that the utensil 10, 80 effectively ensures even heat distribution in a container. Simultaneously, the utensil 10, 80 overcomes the problem of substance adhering to the container and the formation of lumps during microwave cooking.

CLAIMS

1. A cooking utensil for use in a microwave oven, the cooking utensil including

at least one stirring member which is engageable with a vessel in which a substance to be cooked is contained, the, or each, stirring member being dimensioned to extend into the vessel and being rotatable relative to the vessel, in use; and

an obstruction member connected to, and extending from, the, or each, stirring member, the obstruction member being dimensioned so that, in use, the obstruction member abuts a wall of the oven while the vessel is rotated by a rotary drive mechanism of the oven, causing relative rotational movement between the vessel and the, or each, stirring member.

2. The utensil as claimed in Claim 1, which includes a closure which is fastenable to the vessel to close the vessel.

3. The utensil as claimed in Claim 2, in which the, or each, stirring member is rotatably mounted on the closure to extend into the vessel.

4. The utensil as claimed in Claim 3, in which the closure has at least one baffle arranged thereon, the, or each, baffle being dimensioned to extend into the vessel.

5. The utensil as claimed in Claim 4, in which the, or

each, stirring member is configured so that the, or each, stirring member is located proximate an inner surface of a wall of the vessel.

6. The utensil as claimed in Claim 5, in which the, or each, stirring member is shaped to correspond substantially with a cross-sectional profile of the vessel, taken through an axis of symmetry of the vessel.

7. The utensil as claimed in Claim 6, in which the, or each, baffle is positioned operatively inwardly of the, or each, stirring member.

8. The utensil as claimed in Claim 7, in which the, or each, stirring member is removable from the closure.

9. The utensil as claimed in any one of the preceding claims, in combination with a vessel, the, or each stirring member being engageable with the vessel and rotatable relative to the vessel.

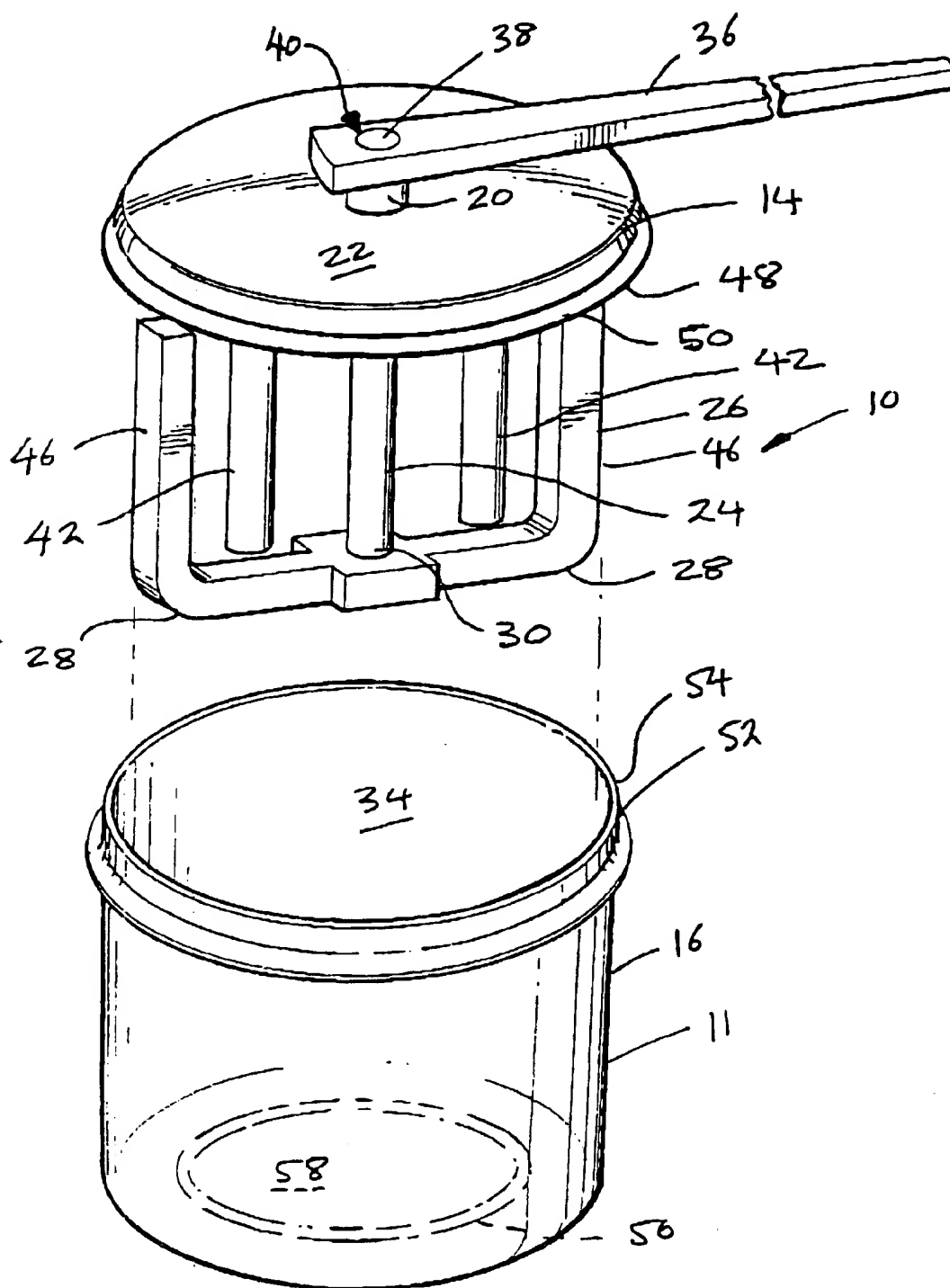
10. The utensil as claimed in Claim 9, which includes an engaging means which is arranged on the vessel to permit the vessel operatively to engage the rotary drive mechanism of the oven.

11. The utensil as claimed in Claim 10, in which the

engaging means includes a plate which is engageable with a drive shaft of the rotary drive mechanism in a conventional manner, the plate and the vessel having complementary retaining formations defined thereon to inhibit relative rotational movement of the vessel and the plate.

12. The utensil as claimed in Claim 10, in which the engaging means includes a frictional engaging member which is locatable between a bottom surface of the vessel and a turntable of the oven so that the vessel can frictionally engage a surface of the turntable.

13. A new utensil for a microwave oven, substantially as described herein, with reference to the accompanying drawings.

FIGURE 1

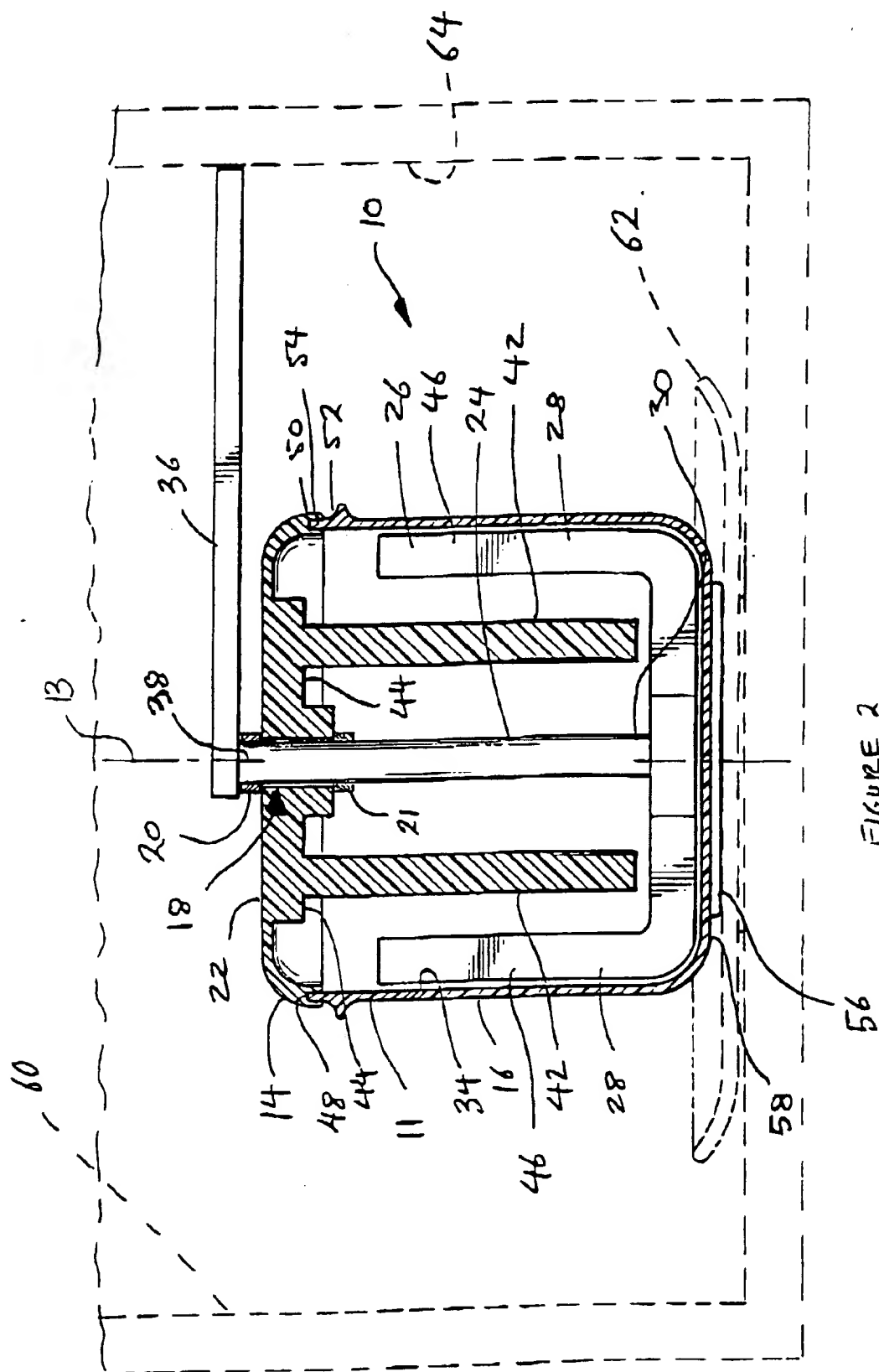


FIGURE 2



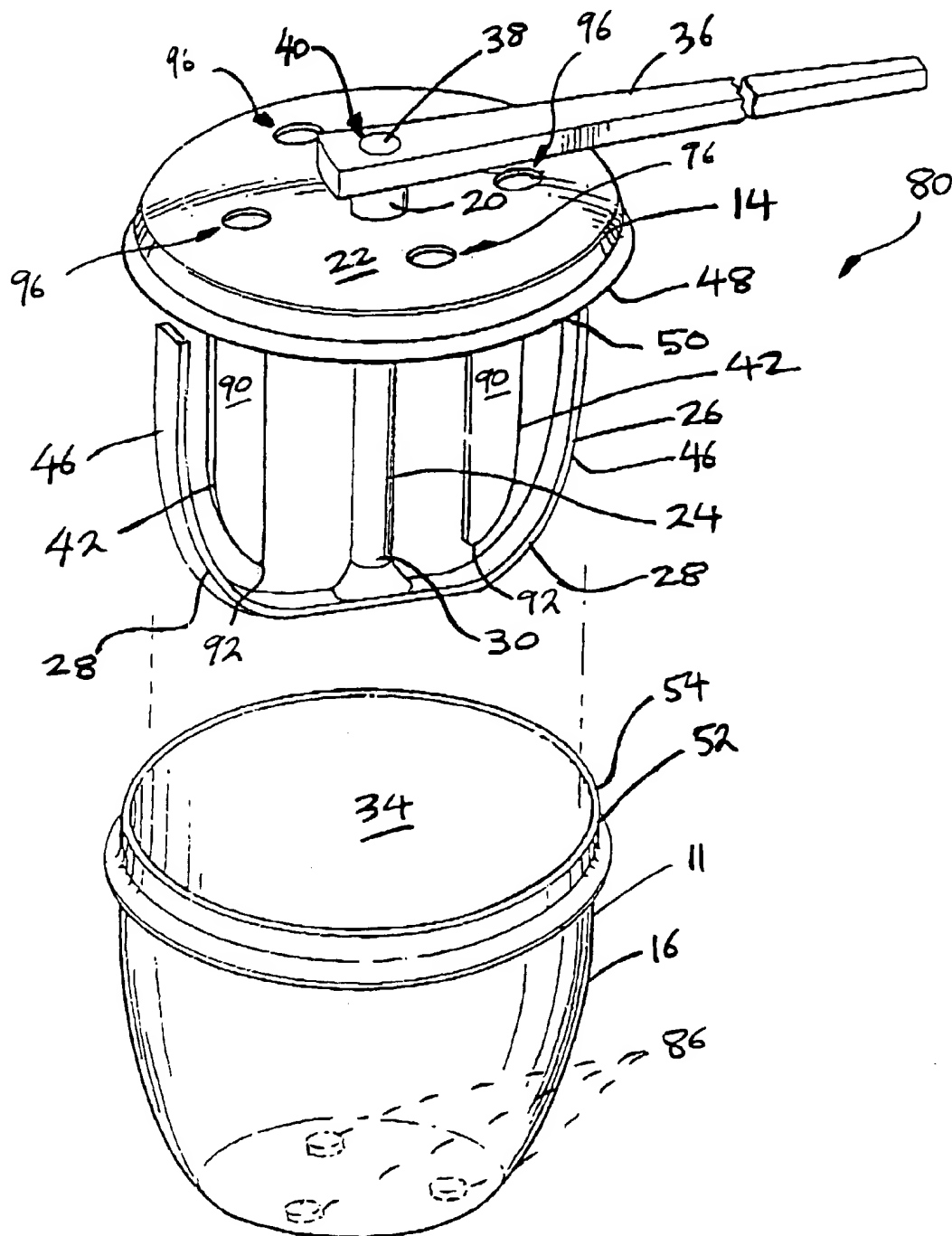
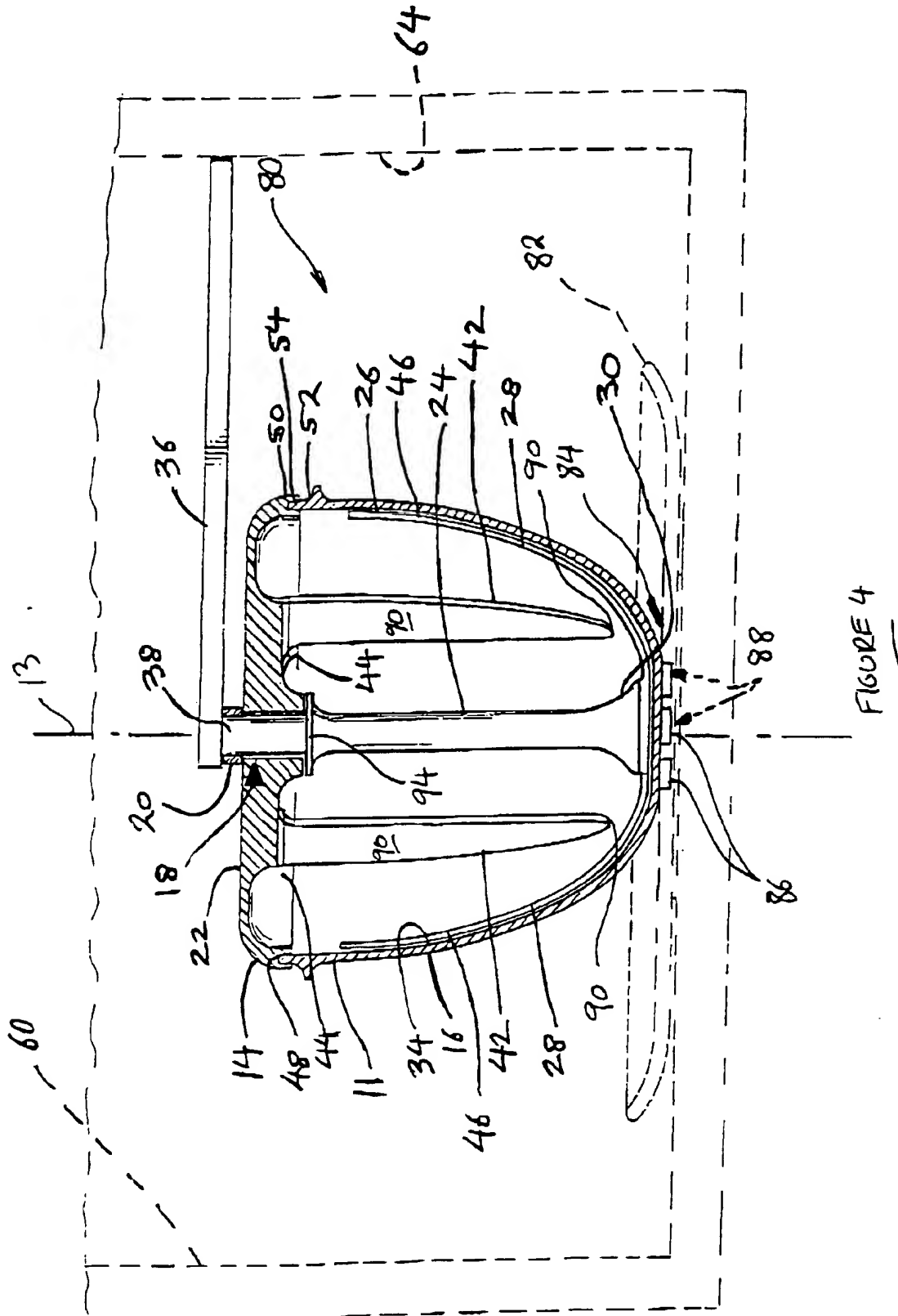


FIGURE 3



## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US96/16282**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) : H05B 6/78, 6/80; B01F 7/18; A47J 43/046

US CL : 219/726, 752; 99/348, DIG. 14

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 219/726, 752, 754, 755, 762; 99/348, DIG. 14, 451; 366/146, 228

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y	US 4,904,834 A (BOWEN et al) 27 February 1990 See Figures 1 and 4 and col. 1, line 43 - col. 3, line 27.	1, 13 ----- 2-12
X -- Y	GB 2 159 027 A (THORN EMI) 20 November 1985 See Figure 1 and page 1, lines 62-125.	1-10, 13 ----- 11, 12
X	WO 93/10648 (JANNAWAY) 27 May 1993 See Figs. 1 and 2; page 2, lines 5-32 and page 3, lines 30-37.	1-13
X	GB 2 230 409 A (BURTON) 17 October 1990 See Fig. 1 and page 2.	1-13

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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Date of the actual completion of the international search 10 DECEMBER 1996	Date of mailing of the international search report <b>14 MAR 1997</b>
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**INTERNATIONAL SEARCH REPORT**

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,937,418 A (BOULARD) 26 June 1990 See Figure 2.	1-13